

## CLAIMS

What is claimed is:

1. A baffle plate assembly for surrounding a substrate holder in a plasma processing system comprising:  
a centering ring configured to be coupled to said substrate holder; and  
a baffle plate comprising one or more passageways, wherein said baffle plate is configured to be centered within said plasma processing system by coupling said baffle plate to said centering ring.
2. The baffle plate assembly of claim 1, wherein said centering ring is coupled to said substrate holder using fasteners.
3. The baffle plate assembly of claim 1, wherein said centering ring comprises a centering feature configured to center said baffle plate on said centering ring.
4. The baffle plate assembly of claim 3, wherein said centering feature comprises at least one of a centering pin, a centering receptacle, a centering edge, and radial face gear teeth.
5. The baffle plate assembly of claim 3, wherein said baffle plate comprises a mating feature configured to be coupled with said centering feature.
6. The baffle plate assembly of claim 5, wherein said mating feature comprises at least one of a centering pin, a centering receptacle, a centering edge, and radial face gear teeth.
7. The baffle plate assembly of claim 1, wherein said centering ring is made from aluminum.

8. The baffle plate assembly of claim 1, wherein said baffle plate is made from at least one of aluminum, alumina, silicon, silicon carbide, silicon nitride, quartz, carbon, and ceramic.

9. The baffle plate assembly of claim 1, wherein a surface of said baffle plate comprises a protective barrier.

10. The baffle plate assembly of claim 1, wherein a portion of a surface of said baffle plate comprises a protective barrier.

11. The baffle plate assembly of claim 9 or 10, wherein said protective barrier comprises at least one of surface anodization, a coating formed using plasma electrolytic oxidation, and a spray coating.

12. The baffle plate assembly of claim 9 or 10, wherein said protective barrier comprises a layer of at least one of a III-column element and a Lanthanum element.

13. The baffle plate assembly of claim 9 or 10, wherein said protective barrier comprises at least one of  $\text{Al}_2\text{O}_3$ , Yttria ( $\text{Y}_2\text{O}_3$ ),  $\text{Sc}_2\text{O}_3$ ,  $\text{Sc}_2\text{F}_3$ ,  $\text{YF}_3$ ,  $\text{La}_2\text{O}_3$ ,  $\text{CeO}_2$ ,  $\text{Eu}_2\text{O}_3$ , and  $\text{DyO}_3$ .

14. The baffle plate assembly of claim 1, wherein said one or more passageways comprises at least one of a slot, and an orifice.

15. The baffle plate assembly of claim 1, wherein at least one of the size, shape, and distribution of said one or more passageways varies on said baffle plate.

16. A disposable baffle plate for surrounding a substrate holder in a plasma processing system comprising:

a ring comprising a first edge configured to be coupled to said substrate holder, a second edge configured to be proximate a wall of said

plasma processing system, and one or more openings to permit the passage of gas therethrough,

wherein said coupling of said first edge to said substrate holder facilitates centering said ring in said plasma processing system such that a space between said second edge and said wall is substantially constant.

17. A method of replacing a baffle plate surrounding a substrate holder in a plasma processing system comprising:

removing said first baffle plate from said plasma processing system;  
and

installing a second baffle plate in said plasma processing system by coupling said second baffle plate to said substrate holder, wherein said coupling facilitates auto-centering of said second baffle plate in said plasma processing system.